SOE 21: Computational Social Science

Time: Thursday 17:00–18:00 Location: MA 001

SOE 21.1 Thu 17:00 MA 001

Online platforms and democracy: measuring systemic risks now and in the future — •Philipp Lorenz-Spreen[1], Lisa Oswald[1], Stephan Lewandowsky[2,3], and Ralph Hertwig[1] — [1]Center for Adaptive Rationality, Max Planck Institute for Human Development, Berlin, Germany — [2]School of Psychological Science and Cabot Institute, University of Bristol, Bristol, UK — [3]School of Psychological Science, University of Western Australia, Perth, Australia

Information and communication technology has undergone dramatic developments over the past two decades. Increased peer-to-peer connectivity has led to more self-organised public discourse, but it has also given researchers new tools to quantify precisely this systemic shift. Detailed and longitudinal data from social media allow us to measure and model their network structures and dynamics. However, to get a holistic and global picture, a recent systematic literature review has provided us with a number of dimensions of political behaviour that appear to be influenced by the use of digital media. Our findings show that, while the directions within each dimension are mostly clear, they are distributed differently globally and the mechanisms by which these dimensions are linked are still unknown. Understanding these better is crucial for civil society in democracies worldwide, and I will conclude with a methodological outlook on how we can empirically investigate these missing links in the future.

SOE 21.2 Thu 17:15 MA 001

Structure and dynamics of climate change contrarianism on Reddit — •Armin Pournaki[1,2,3], Jean-Philippe Cointet[2], Thierry Poibeau[3], Jürgen Jost[1], and Eckehard Olbrich[1] — [1]Max Planck Institute for Mathematics in the Sciences, Leipzig — [2]médialab, SciencesPo, Paris — [3]Laboratoire Lattice, Paris

Even though scientific consensus on the human effects on climate change is established, there exists a growing contrarian movement that aims to reduce the consideration of climate change for policy making. This work aims to shed light on the argumentation patterns observed in everyday discussions of climate contrarians on the social media platform Reddit. Using an existing transformer-based text classifier trained on hand-annotated paragraphs of contrarian claims (Coan et al. 2021), we show that the most frequently encountered claims against climate change in this space are 1) attacks against the climate movement, 2) attacks against climate science and 3) questioning the effect of human impact on global warming. These patterns are stable over time. Computing the entropy of users' claim distributions and embedding them into a lower-dimensional argument space, we show that many Redditors adopt a variety of (sometimes incompatible) arguments and that the above mentioned top claims constitute the main argumentative axes that divide discussions in the subreddit r/climateskeptics. Finally, we investigate the role of influencers and show that the majority of the content discussed is generated by a small number of highly active accounts who predominantly push content that directly attacks the climate movement and scientists.

SOE 21.3 Thu 17:30 MA 001

Issue and user alignment in the German Twittersphere — Armin Pournaki[1,2,3], Felix Gaisbauer[4], and •Eckehard Olbrich[1] — [1]Max Planck Institute for Mathematics in the Sciences, Leipzig — [2]médialab, SciencesPo, Paris — [3]Laboratoire Lattice, Paris — [4]Weizenbaum Institut, Berlin

The rise of social media platforms has changed the structure of the public sphere. Instead of the unidirectional one to many communication of classical mass media, social media platforms created a networked public sphere and thus networks are a natural way to study the structure of public discourse on these platforms.

This work investigates the interaction structure as well as the content of trending topics of the German Twittersphere over two years (03/2021 to 03/2023). Do users sort into similar opinion groups across different themes? Are there themes that are more polarizing than others? What is the role of certain types of users (influencers, spreaders) in driving these phenomena?

Using clusters in retweet networks as opinion clusters in the underlying debate, we measure the alignment of users across issues over and show that Twitter users have a general tendency to sort into temporally stable opinion groups, and that certain overarching themes, such as COVID, align users more strongly than others. Furthermore, we investigate the role of power users in driving this alignment and shaping the perception of public debate.

SOE 21.4 Thu 17:45 MA 001

Hierarchical Clustering and Polarization in affiliation networks — •Emanuele Cozzo[1], Adrian Fernandez Cid[2], Oriol Pujol[2], and Luce Prignano[1] — [1]Univeristat de Barcelona Institute of Complex Systems — [2]Facultat de Matematiques i Informatica, Universitat de Barcelona

Social and political polarization has long been a key subject in both academic and mainstream discussions. The key focus in polarization research is its measurement. Structural methodologies emphasize deducing polarization from the characteristics of the system's network representation. Polarization metrics necessitate explicit definitions in terms of groups, which can be identified either endogenously or exogenously. In cases involving endogenously identified groups, the challenge of measuring polarization intertwines with the task of data clustering. Commonly, data is first clustered, followed by the measurement of polarization. Yet, a more coherent approach would involve identifying clusters based on the same principles used for measuring polarization.

In our study, we investigate an axiomatic suite of polarization metrics to evaluate the polarization within the identified segments and to assist in the hierarchical clustering of social entities within the system. Our focus is particularly on affiliation networks. We demonstrate our findings using the Southern Women dataset. With the insights gleaned from our analysis of this established system, we then extend our methodology to explore contemporary, real-world situations.